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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,815	02/16/2001	Yeuk-Fai Edwin Mok	4969/USA/ISM/COPPER/SB	4127

32588 7590 08/18/2004

APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER

MACARTHUR, SYLVIA

ART UNIT PAPER NUMBER

1763

DATE MAILED: 08/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/785,815	<b>Applicant(s)</b> MOK ET AL.	
	<b>Examiner</b> Sylvia R MacArthur	<b>Art Unit</b> 1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8,10,12,13,23,24 and 27-37 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-8,10,12,13,23,24 and 27-37 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 16 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some    \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/13/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The indicated allowability of claims 3, 11-13, 23, 26, and 34-37 is withdrawn in view of Rattan et al. Rejections using Rattan et al as a secondary reference are repeated from the previous action.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8,10, 12, 13, 23, 24, and 27-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hey et al (US 6,551,488 in view of Rattan et al (US 4,489,740).

**Regarding Claim 1, 5, 24, and 28:** Hey et al teaches the segmenting of a processing system into wet and dry areas. The mainframe 214 comprises a transfer station 216 (transfer position), a spin-rinse dry (SRD) station 212 (rinse position), and an IBC system 235 (etch position), see col. 5 lines 12-62.

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A plurality of nozzles are described as being articulated to a variety of positions the first nozzles extend fluid onto the top of the substrate while the second nozzles extend fluid onto the bottom of the substrate.

Hey fails to teach a plurality of cooperatively moveable etchant dispense nozzles dispense etchant on the front and backside of the substrate.

Rattan teaches a plurality of cooperatively movable etchant dispense nozzles (18 and 20) wherein the arm and nozzles are configured to dispense etchant on the front and back of the substrate. The nozzles are described as being carried on a common, oscillating arm 22, see col.4 lines 32-37.

The motivation to modify the apparatus of Hey to include nozzles like those of Rattan are that this configuration provides for the uniform etching of the substrate on both sides of the wafer.

**Regarding claims 2 and 3:** The wafer orientor 230 (substrate centering hoop) of Hey positions each wafer 234 in a desired orientation to ensure that the wafer is properly processed.

**Regarding claims 4, 27, and 33:** Hey teaches that the unwanted deposits are removed from the edge exclusion zone by the adjustment of the nozzles, see col.8 lines 5-18.

The pedestal actuator 334 rotates the pedestal to spin the substrate and raises and lowers the pedestal. The system of Dordi also adjusts the orientation and placement of nozzles so that the unwanted deposits can be removed along the edge of the substrate to create an edge exclusion zone. The fluid/chemical delivery assembly 2106 comprises one or more nozzles 2150 disposed on one or more dispense arms 2152 which dispenses rinsing fluid and etchant. The dispense arm

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2152 includes one or more conduits extending through the dispense arm for connecting the nozzle 2150 to an etchant source.

The loading station transfer robot 228 (actuator) also transfers wafer 234.

**Regarding claims 6 and 29:** Hey et al teaches in col. 27 lines 57-64 that slit valve 922 is provided as an access route for the transfer robot. Fig. 2 illustrates its proximity to the transfer position.

**Regarding claims 7 and 30:** Col. 6 lines 5-8 discusses that the pedestal actuator 334 rotates the pedestal to spin the substrate and raises and lowers the pedestal, this is illustrated as a spindle assembly in Fig. 4.

**Regarding claims 8 and 31:** Col. 6 lines 13-15 that a vacuum chuck is used.

**Regarding claim 32:** The articulating member anticipates a dispensing arm.

**Regarding claim 10:** Hey teaches that the unwanted deposits are removed from the edge exclusion zone by the adjustment of the nozzles, see col.8 lines 5-18. It is a matter of intended use that the nozzles dispense etchant rather than rinsing fluid. The nozzles of Hey are inherently capable of dispensing etchant.

**Regarding claims 12, 13, 23, and 34-37:** Neither Hey et al or Rattan et al teach a plurality of etchant dispensing arm assemblies. Nevertheless, it has been by In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) that the duplication of parts has no patentable significance unless a new and unexpected result is produced.

The motivation to provide a plurality of dispensing arms that the plurality provides for a more rapid uniform supply of material to the substrate.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a plurality of dispensing arm assemblies in the apparatus of Hey modified by Rattan et al.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

August 16, 2004



GREGORY MILLS  
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